

# INFOD 'Hello World' Example

# Use Case description

## Scenario

An accident has occurred, and a bystander reports the event to the E911 center. The E911 center then requests for police, ambulance and/or fire truck to be dispatched based on the current description of the event. As the first officer arrives at the location, the officer reports more details of the accident to the E911 center and also updates on the developments and states of the incident. The E911 center based on the description of the event and the current state of the event alerts the necessary services (fire, medical and police) for action. If resources in a particular region are not sufficient, then the E911 center needs to make a decision in calling for additional resources based on their capabilities and availabilities.

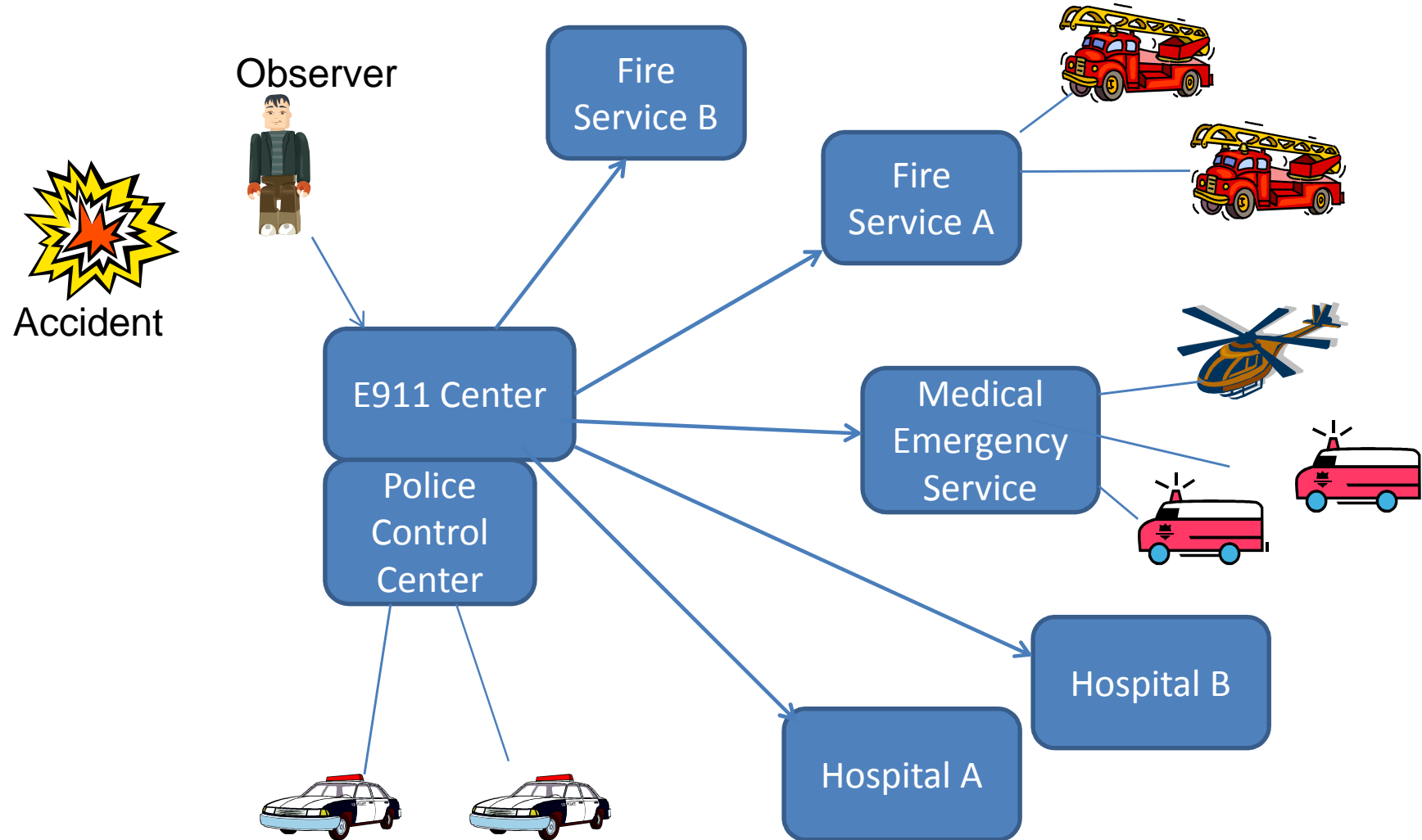
# Use Case description

## Setup

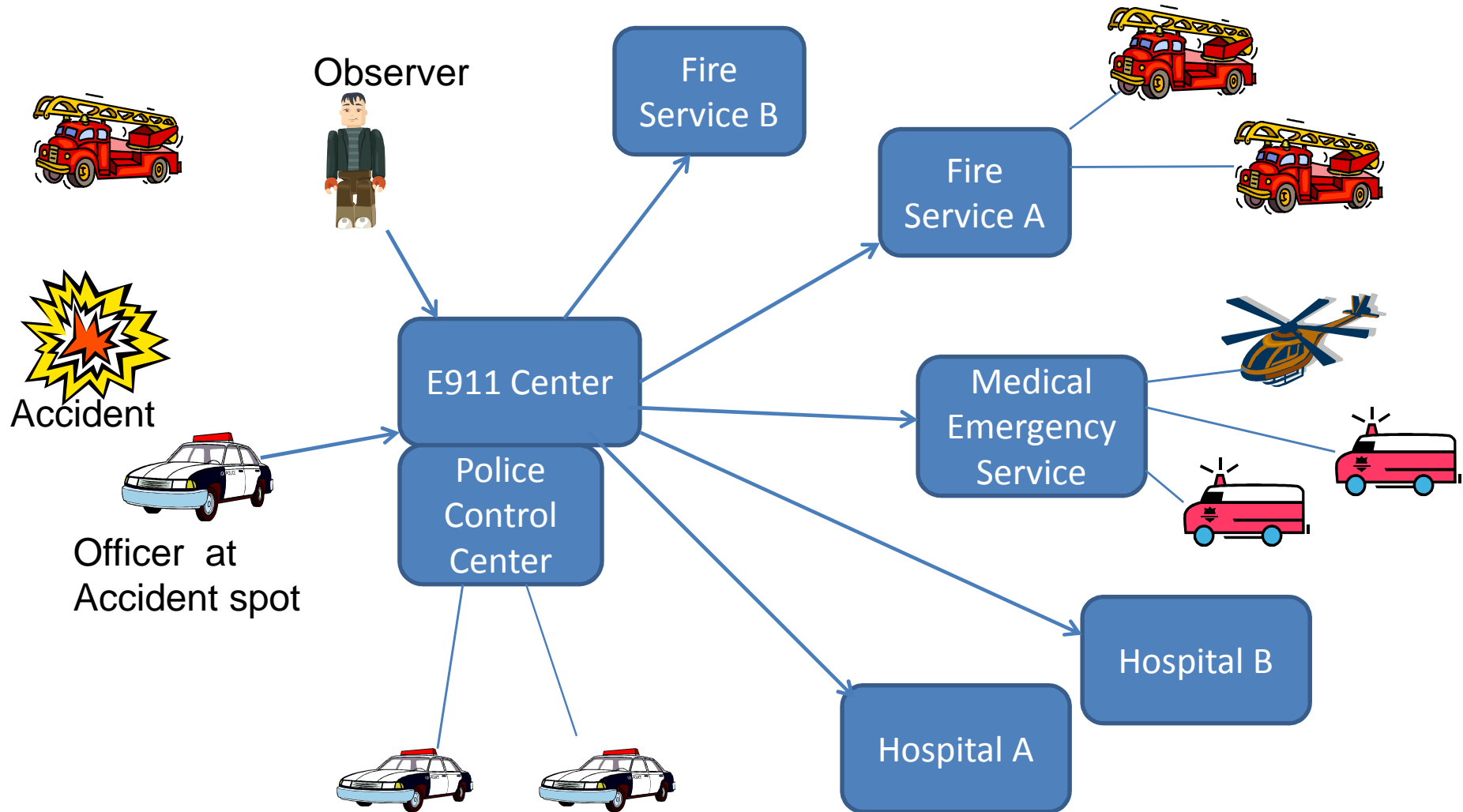
- The E911 center receives information of any emergency within an area, and based on the incident information it communicates with first responders such as police, hospital, fire and medical services. The E911 center operates closely with the police (control center)
- The police control center instructs and maintains information of its resources in an active duty. Similarly, the fire service and medical services control and command over their resources.
- The E911 center instructs these control centers and the control center communicates to their resources.
- There might be more than one operating center for a service, example the fire service might operate in more than one location within the region and each have their own resources.

The next 2 slides detail on the scenario described in the previous slide. Initially a bystander alerts the E911 followed by an officer onsite reporting information on the incident.

# First Responder Use Case



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- The use case is limited to the scenario described above for simplicity.
- Also, communication between police officer and their superiors or control centers, fire trucks and their control centers are beyond the scope of this use case as they tend to complicate the scenario hindering a clear understanding of the system.
- This use case is simply to demonstrate the functioning of INFOD, however the INFOD system functionality is not limited to the use case described in this example.

# Issues

- Knowledge of resources available in case of an emergency.
- Managing resources in an emergency by knowing the current status.
- What to do in an emergency – the policies/rules to be enforced.

# INFOD - First Responder Use Case

The following slides identify the use case with INFOD.

- INFOD helps
  - monitor resources
  - associate services
  - knowledge of the capability/availability of the resource
  - define the incident object, structure + policies/ constraints which need to be enforced based on the event description.
- All entities in the use case are registered in the INFOD registry and are described in terms of the property vocabulary. The vocabulary captures static and transient characteristics of the entity. Transient parameter being the current status of a resource(active, active but unavailable, out of service). These parameters don't change frequently as the location of a moving entity. For parameters such as location which changes frequently must be outside INFOD, as frequent changes would trigger mutual filtering in the registry yielding no significant change to mapping between entities.



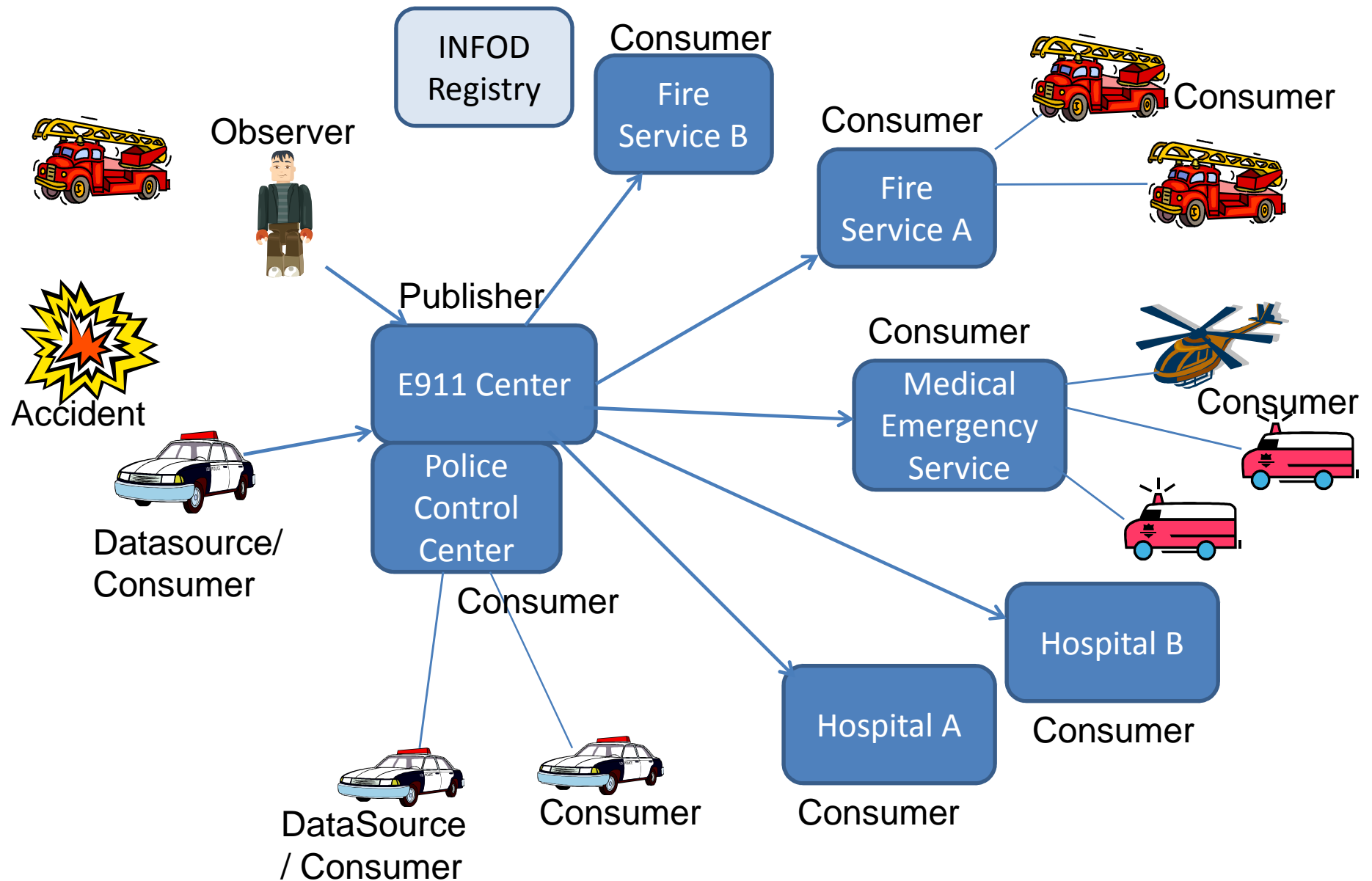
# INFOD - First Responder Use Case

- The data vocabulary defines the semantics for describing the event and also for instructing the first responders
- The association of resources – all services report to the E911 center – static behavior is captured in the property constraint
- The incident object is captured by the data constraint and dynamic consumer constraint

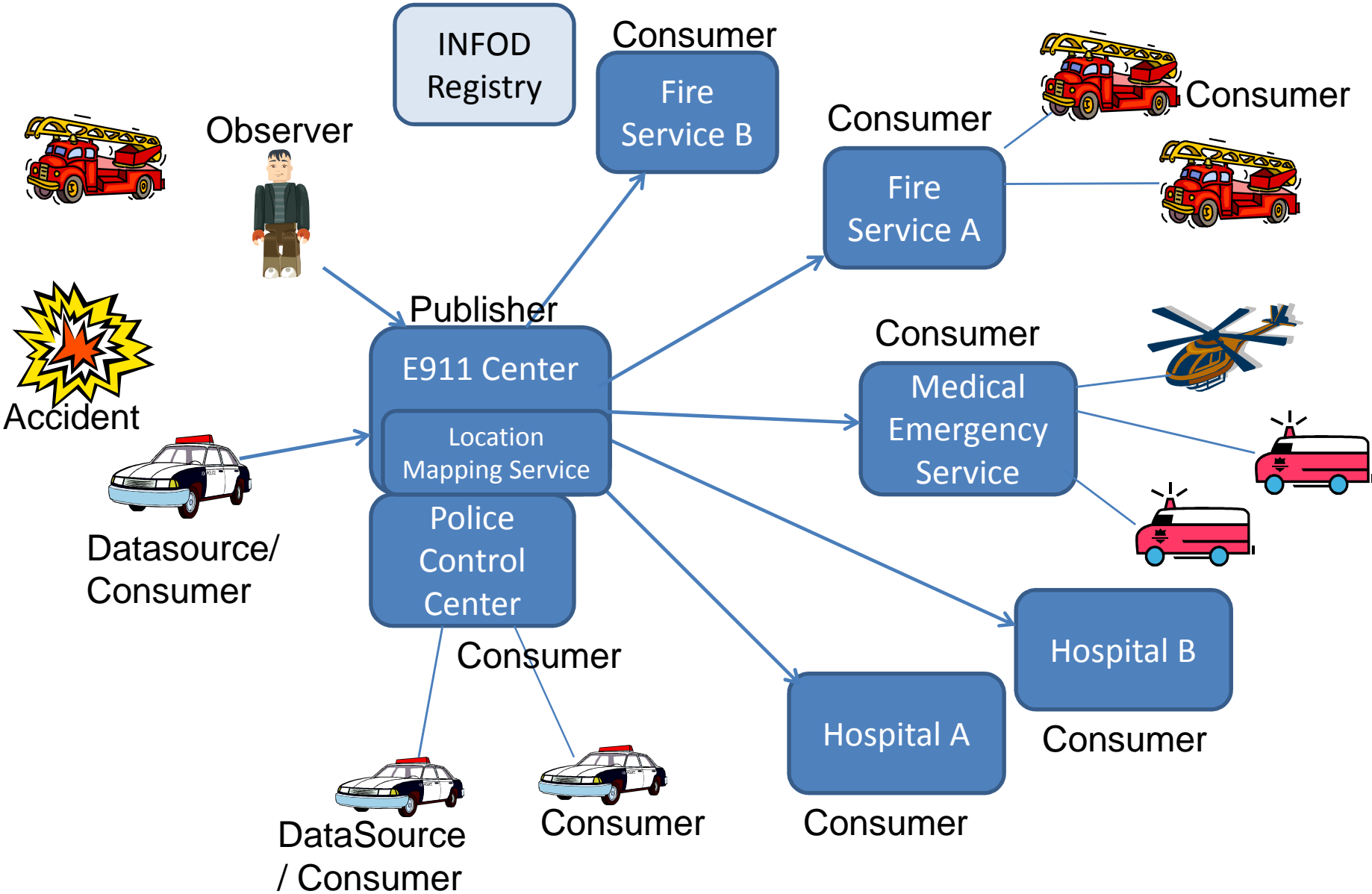
Example: If fire with Severity – Moderate then dispatch 2 fire engines

If fire with Severity – Extreme then dispatch all fire engines in the fire station A, and look for the nearest fire station which has no active event and have resources available.

# INFOD - First Responder Use Case



# INFOD - First Responder Use Case



# Property Vocabulary

Predicates	Description
OrganizationName	Name of the entity
OrganizationDescription	Description of the entity
OrganizationType	Enumeration Type classifying the organization (Police, FireService, MedicalService, Hospital)
Location	Location of the organization
Resources	Description of the resources
ResourcesType	Enumeration Type (FireTruck, Ambulance, Police, Helicopter)
ResourceStatus	Enumeration Type on the availability (0 – Active on duty and not available, 1 - Available for emergency)
ResourceLocation	Location of the resource

# Data Vocabulary

Predicates	Description
Event	Details like number of people involved, number of buildings affected, text description of the event,
EventLocation	Location
EventCategory	Geo, Met, Safety, Security, Rescue, Fire, Health, Env, Transport, Infra, CBRNE, Other
EventCertainty	Very likely, Likely, Possible, Unlikely
EventSeverity	Extreme, Severe, Moderate, Minor
ResponseType	Shelter, Evacuate, Prepare, Execute, Monitor, Assess, None
ResponseAction	Text description of the response action
EventScope	Public, Restricted, Private
EventStatus	Actual, Exercise, Test
Urgency	Immediate, Expected, Future, Past

# Subscription 1

- Property Constraints
  - for \$pub in fn:collection(\$\$INFODPublisher) where \$pub//OrganizationType='E911'
  - For \$con in fn:collection(\$\$INFODconsumer) where \$pub//OrganizationType = 'FireService' and \$pub//ResourceStatus = 1
- Data constraints  
declare namespace  
  \$data = http://infod.firstresponder.net.com/AlertDataVocabulary;  
  for \$dv in fn:collection(\$\$INFODdatavocabulary)  
    \$dv//\$data:Event='Fire' and \$dv//\$data:EventSeverity='Extreme'  
    return {\$Event, \$EventLocation}  
  for \$dv in fn:collection(\$\$INFODdatavocabulary)  
    \$dv//\$data:Event='Fire' and \$dv//\$data:EventStatus='Test'  
    return {\$ResponseType="None"}
- Dynamic consumer constraint
  - for \$p in fn:collection(\$\$INFODconsumer)  
  where \$p//ResourceType = 'FireEngine'  
  Details such as inform the closest fire engine could be added here.